DPS Poster Paper

Decadal Study for Radio Science Investigations In the Deep Space Network

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Abstract

Scientists utilize the telecommunication links between spacecraft and Earth to examine very small changes in the phase/frequency, amplitude, and/or polarization of radio signals to investigate planetary atmospheric and ionospheric composition, structure of planetary rings, planetary surface characteristics, magnetic fields of the Sun and planets, the corona and solar wind, cometary mass flux and particle distribution, planetary gravitational fields, shapes, masses, and bulk characteristics, planetary range-fixes and ephemeredes, gravitational waves, gravitational redshift, relativistic time-delay, wind profiles, and other phenomena.

These Radio Science investigations address the NASA themes: Exploration of the Solar System, Structure and Evolution of the Universe, and The Sun and Earth Connection. With a strong international collaboration, Radio Science experiments have been conducted by almost every deep space mission and have resulted in numerous publications in scientific journals and conferences.

Radio Science utilizes the stations of the Deep Space Network as an instrument for world-class science research, by augmenting the network with sophisticated equipment that push the limits of technology to achieve the maximum science return.

We will present the discoveries from this field and examine the priorities for maintaining and developing capabilities in the next decade in order to further advance the science and enable future experiments.

Additional information and contact information to send us input are found at the website: **radioscience.jpl.nasa.gov**